AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior versions, and listings, of claims in this application:

Listing of Claims:

Claims 1-53 (cancelled after entry of new Claims 54-106)

Claim 54. (new) A method for synthesizing stoichiometric LiBC comprising the steps:

a) uniformly-mixing elemental lithium, boron, and graphite;

b) heating said uniform-mixture in an inert atmosphere by a procedure selected from a group consisting of arc-melting a pellet formed from said uniform-mixture, thereby triggering a self-propagating exothermic reaction, and heating said uniform-mixture in a sealed tantalum ampoule.

Claim 55. (new) A synthesis method according to Claim 54, wherein said heating procedure comprises said arc-melting of said pellet formed from said uniform-mixture, thereby triggering said self-propagating exothermic reaction.

Claim 56. (new) A synthesis method according to Claim 54, wherein said heating procedure comprises said heating of said uniform-mixture in said sealed tantalum ampoule.

Claim 57. (new) A synthesis method according to Claim 54, further comprising the step of forming hole-doped $Li_{1-x}BC$ from said stoichiometric LiBC through vacuum de-intercalation, wherein $0 \leq x < 1$.

Claim 58. (new) A method of synthesizing stoichiometric LiBC, comprising the steps:

a) mixing, uniformly, elemental mixtures of boron (B) and graphite (C) powders with lithium (Li) under said inert gas;

b) pressing said mixture of Li-B-C into a pellet; and

c) arc-melting said Li-B-C pellet to trigger a self-propagating exothermic reaction, thereby producing the LiBC.

Claim 59. (new) A synthesis method according to Claim 58, wherein said lithium is present in an excess amount, whereby said excess amount of lithium serves as a flux, vaporizes, and is released during said self-propagating exothermic reaction.

Claim 60. (new) A synthesis method as recited in Claim 58, further comprising the step of forming hole-doped $Li_{1-x}BC$ through vacuum de-intercalation, wherein $0 \leq x < 1$.

Claim 61. (new) A synthesis method according to Claim 60, wherein said de-intercalation is performed in a vacuum of at least approximately 10^{-6} torr.

Claim 62. (new) A synthesis method according to Claim 60, wherein said vacuum de-intercalation is performed for a time period of between approximately five minutes to approximately one hundred hours.

Claim 63. (new) A synthesis method according to Claim 60, where said vacuum de-intercalation is carried out at a temperature of between approximately 600 °C to approximately 1200 °C.

Claim 64. (new) A synthesis method according to Claim 60, further comprising the step of adjusting the structure of said $Li_{1-x}BC$ by forming thin films of said $Li_{1-x}BC$ over a substrate, wherein stress induced on said substrate alters said $Li_{1-x}BC$'s electronic structure.

Claim 65. (new) A synthesis method according to Claim 58, wherein said lithium, boron, and carbon are mixed in a ratio of approximately 1.3:1:1, respectively.

Claim 66. (new) A method of synthesizing stoichiometric LiBC, comprising the steps:

a) mixing, uniformly, elemental mixtures of boron (B) and graphite (C) powders with lithium (Li) under said inert gas;
b) sealing said mixture of Li-B-C in a tantalum ampoule; and
c) heating said tantalum ampoule in a heating chamber.

Claim 67. (new) A synthesis method according to Claim 66, wherein said tantalum ampoule heating comprises the steps:

a) heating to approximately 1000 °C and
b) annealing for approximately 10 hours.

Claim 68. (new) A synthesis method according to Claim 66, further comprising the step of cooling said heated and annealed tantalum ampoule at a cooling rate of approximately 3 °C/min.

Claim 69. (new) A synthesis method according to Claim 66, further comprising the step of forming hole-doped $Li_{1-x}BC$ through vacuum de-intercalation, wherein $0 \leq x < 1$.

Claim 70. (new) A synthesis method according to Claim 69, wherein said vacuum is set to at least approximately 10^{-6} torr and said de-intercalation is performed for a time period of between approximately five minutes to approximately one hundred hours at approximately 600 °C to approximately 1200 °C.

Claim 71. (new) A synthesis method according to Claim 69, further comprising the step of adjusting the structure of said $Li_{1-x}BC$ by forming thin films of said $Li_{1-x}BC$ over a substrate, wherein stress induced on said substrate alters said $Li_{1-x}BC$'s electronic structure.

Claim 72. (new) A synthesis method according to Claim 66, wherein said lithium, boron, and carbon are mixed in a ratio of approximately 1.3:1:1, respectively.

Claim 73. (new) A method of synthesizing LiBC, comprising the steps:

a) obtaining elemental lithium (Li), boron (B), and graphite (C);

b) uniformly mixing said B and said C;

c) placing said uniform mixture of B and C into an inert gas atmosphere;

d) mixing Li into said uniform mixture of B and C under said inert gas atmosphere;

e) pressing said Li, B, and C mixture into a pellet; and

f) heating said pellet to trigger a self-propagating exothermic reaction, thereby producing the LiBC.

Claim 74. (new) A synthesis method according to Claim 73, wherein said Li, B, and C mixture ratio for Li:B:C ranges from an approximately equal ratio of about 1:1:1, respectively, to a ratio with excess Li.

Claim 75. (new) A synthesis method according to Claim 73, wherein said Li, B, and C mixture ratio for Li:B:C is approximately 1.3:1:1, respectively.

Claim 76. (new) A synthesis method according to Claim 73, wherein said lithium, boron, and graphite all have a purity at or above 99.9%.

Claim 77. (new) A synthesis method according to Claim 73, wherein said boron comprises a powder of approximately 325 mesh.

Claim 78. (new) A synthesis method according to Claim 73, wherein said graphite comprises a powder of approximately 200 mesh.

Claim 79. (new) A synthesis method according to Claim 73, wherein said inert gas comprises argon gas or helium gas.

Claim 80. (new) A synthesis method according to Claim 73, wherein said lithium comprises pieces freshly cut from an ingot under said inert gas atmosphere.

Claim 81. (new) A synthesis method according to Claim 73, wherein said pressing comprises the steps:

a) sealing said Li, B, and C mixture into a die;

b) transferring said Li, B, and C mixture out from under said inert gas atmosphere and into a press mechanism; and

c) pressing said Li, B, and C mixture into said pellet.

Claim 82. (new) A synthesis method according to Claim 81, wherein said pressing of said Li, B, and C mixture into said pellet comprises applying pressure over a period of time.

Claim 83. (new) A synthesis method according to Claim 82, wherein said applied pressure is approximately 3000 pounds-per-square inch (psi) for approximately 10 minutes to a 6 mm die within said press mechanism.

Claim 84. (new) A synthesis method according to Claim 73, wherein said heating of said pellet to trigger said exothermal reaction, comprises the steps:

a) purging impurities from an arc furnace;

b) arc-melting of zirconium in said arc furnace to purify an inert gas atmosphere within said arc furnace;

c) loading said pellet under said inert gas atmosphere into said arc furnace; and

d) heating said pellet under said inert gas atmosphere to trigger said exothermal reaction.

Claim 85, (new) A synthesis method according to Claim 84, wherein said purging comprises argon gas-type purging followed by filling of said arc furnace with argon gas.

Claim 86. (new) A synthesis method according to Claim 74, wherein during said exothermic reaction, said excess Li, having served as a flux, is vaporized and released.

Claim 87. (new) A synthesis method according to Claim 73, further comprising the step of forming hole-doped $Li_{1-x}BC$ in a de-intercalation process under vacuum, wherein $0 \leq x < 1$.

Claim 88. (new) A synthesis method according to Claim 87, wherein said vacuum during said de-intercalation is at least approximately 10^{-6} torr and wherein said de-intercalation is performed in the range of approximately five minutes to approximately one hundred hours at a temperature range of about 600 °C to about 1200 °C.

Claim 89. (new) A synthesis method according to Claim 87, further comprising the step of adjusting the structure of said $Li_{1-x}BC$ by forming thin films of said $Li_{1-x}BC$ over a substrate, wherein stress induced on said substrate alters said $Li_{1-x}BC$'s electronic structure.

Claim 90. (new) A method of synthesizing LiBC, comprising the steps:

a) preparing elemental mixtures of lithium (Li), powdered boron (B), and powdered graphite (C);

b) uniform mixing said powders of B and C;

c) loading said uniform mixture of powered B and C into a dry box filled with inert gas;

d) mixing said dry box contained uniform mixture of powered B and C with Li;

e) sealing said mixture of Li, B, and C in a tantalum ampoule; and

f) heating the ampoule to produce the LiBC.

Claim 91. (new) A synthesis method according to Claim 90, wherein said Li, B, and C mixture ratio for Li:B:C ranges from an approximately equal ratio of about 1:1:1, respectively, to a ratio with excess Li.

Claim 92. (new) A synthesis method according to Claim 90, wherein said Li, B, and C are mixed in a ratio of approximately 1.3:1:1, respectively.

Claim 93. (new)) A synthesis method according to Claim 90, wherein said lithium, boron, and graphite all have a purity at or above 99.9%.

Claim 94. (new) A synthesis method according to Claim 90, wherein said boron comprises a powder of approximately 325 mesh.

Claim 95. (new) A synthesis method according to Claim 90, wherein said graphite comprises a powder of approximately 200 mesh.

Claim 96. (new) A synthesis method according to Claim 90, wherein said inert gas comprises argon gas or helium gas.

Claim 97. (new) A synthesis method according to Claim 90, wherein said lithium comprises pieces freshly cut from an ingot in said dry box under said inert gas atmosphere.

Claim 98. (new) A synthesis method according to Claim 90, wherein said heating comprises heating said ampoule to approximately 1000 °C at approximately three °C/min and annealing for approximately ten hours.

Claim 99. (new) A synthesis method according to Claim 90, further comprising cooling of said ampoule at a fixed rate.

Claim 100. (new) A synthesis method according to Claim 99, wherein said fixed cooling rate is approximately three °C/minute.

Claim 101. (new) A synthesis method according to Claim 90, further comprising the step of forming hole-doped $Li_{1-x}BC$ in a de-intercalation process under vacuum, wherein $0 \leq x < 1$.

Claim 102. (new) A synthesis method according to Claim 101, wherein said vacuum during said de-intercalation is at least approximately 10^{-6} torr and wherein said de-intercalation is performed in the range of approximately five minutes to approximately one hundred hours at a temperature range of about 600 °C to about 1200 °C.

Claim 103. (new) A synthesis method according to Claim 101, further comprising the step of adjusting the structure of said $Li_{1-x}BC$ by forming thin films of said $Li_{1-x}BC$ over a substrate, wherein stress induced on said substrate alters said $Li_{1-x}BC$'s electronic structure.

Claim 104. (new) A synthesis method according to Claim 103, wherein said stress-induced electronic structure alteration controls superconductivity of said $Li_{1-x}BC$.

Claim 105. (new) A synthesis method according to Claim 103, wherein said thin film formation is by a process selected from a group consisting of thin-film deposition techniques consisting of evaporation, sputtering, pulsed laser deposition, pulsed electron deposition, molecular beam epitaxy, and electrochemical deposition.

Claim 106. (new) A synthesis method according to Claim 103, wherein said substrate has a similar crystal structure to that of LiBC toward inducing compressive, tensile, or zero strain.